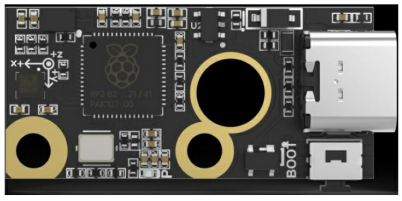
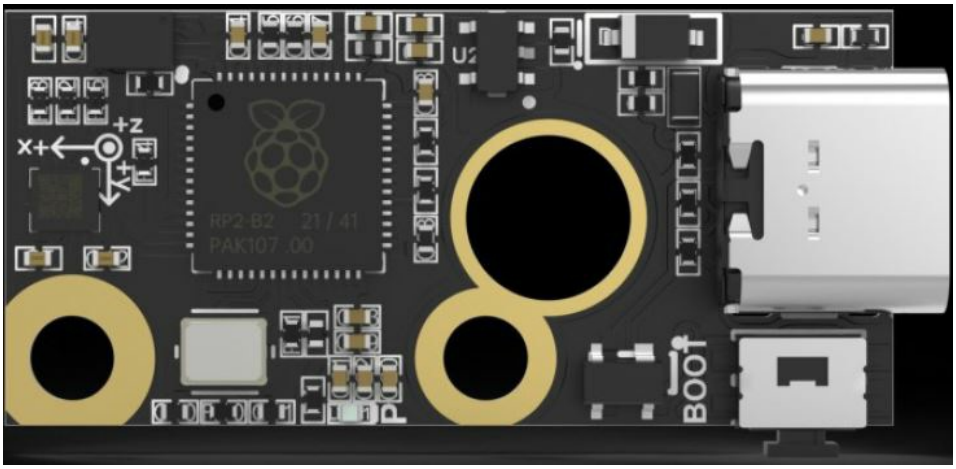


BIGTREETECH S2DW V1.0 Accelerometer Board User Manual

Contents

BIGTREETECH S2DW V1.0 Accelerometer Board



Revision Log

Version	Date	Revisions
v1.00	23rd August 2023	Initial Version

Product Profile
BIGTREETECH S2DW V1.0 is a module for printer resonance compensation. It can communicate through USB, greatly simplifying wiring.

Feature Highlights

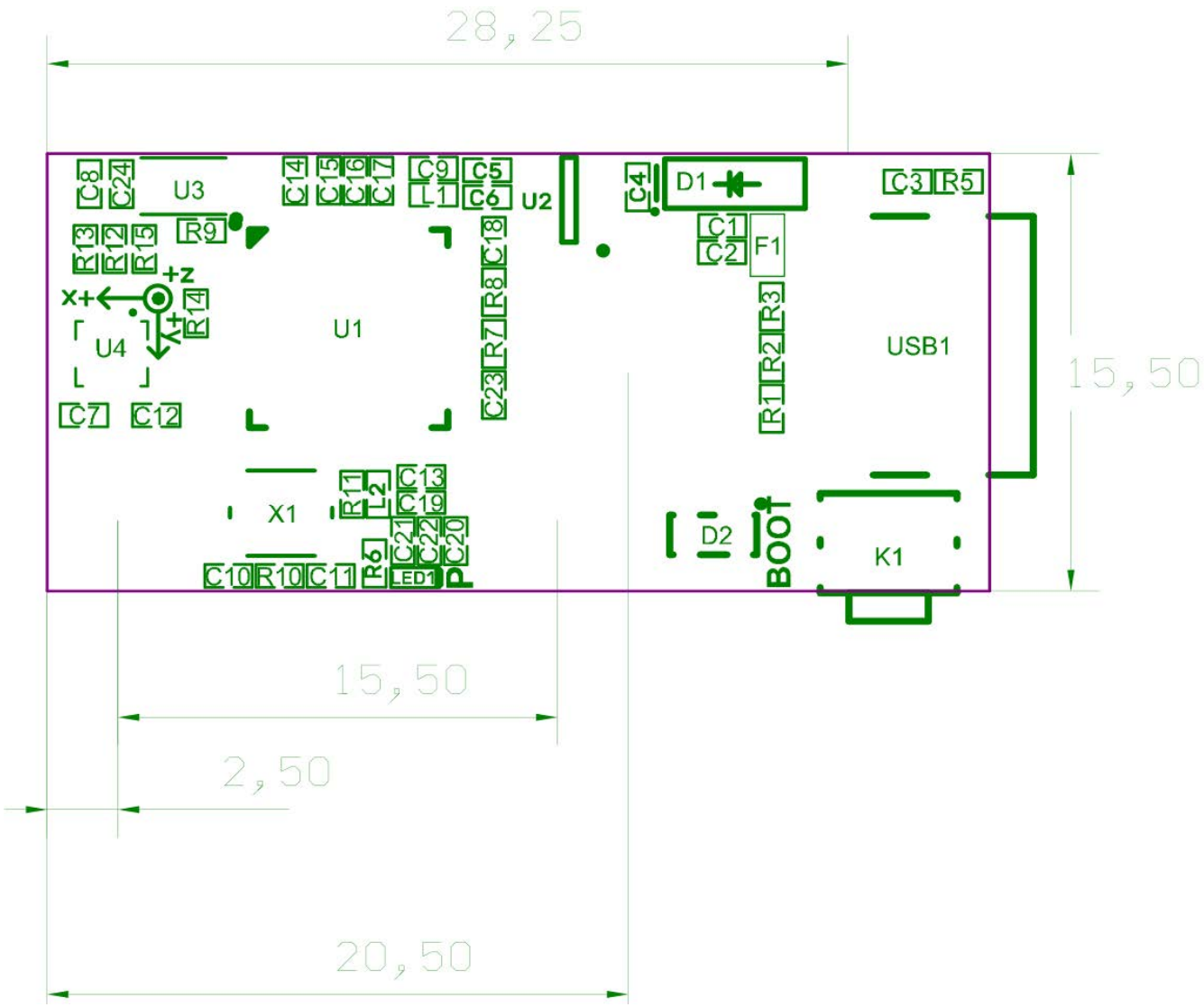
- The board has a reserved BOOT button for easy firmware updates.
- Reserved solder points enable users to customize wiring easily.
- The USB port has an added ESD protection chip to prevent the MCU from being damaged by static electricity through the USB.

Specifications

- **Dimensions** 33.25 x 15.5mm
- **Installation** Dimensions See BIGTREETECH S2DW V1.0-SIZE.pdf for details.
- **Microprocessor** RP2040 Dual ARM Cortex-M0+ @ 133MHz
- **Input** Voltage DC 5V
- **Logic** Voltage DC 3.3V
- **Communication** with PC USB2.0
- **Sensor** LIS2DW
- **Output** Rate 1.6Hz-1600Hz
- **Sensor** Communication 4Line SPI
- **Low Noise** As low as 1.3mg RMS in low power mode.
- **Sensor Operating** Temperature Range -40°C to +85°C

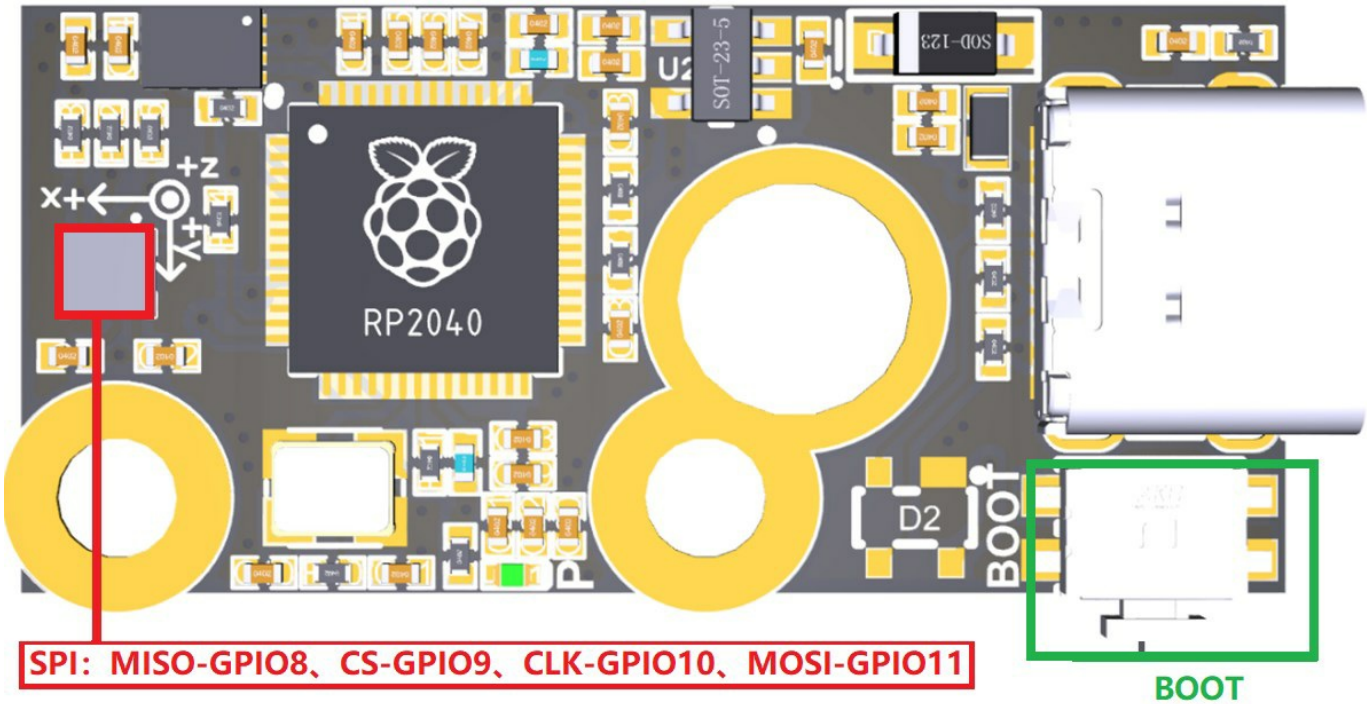
Firmware Support
This product currently only supports Klipper firmware.

Dimensions



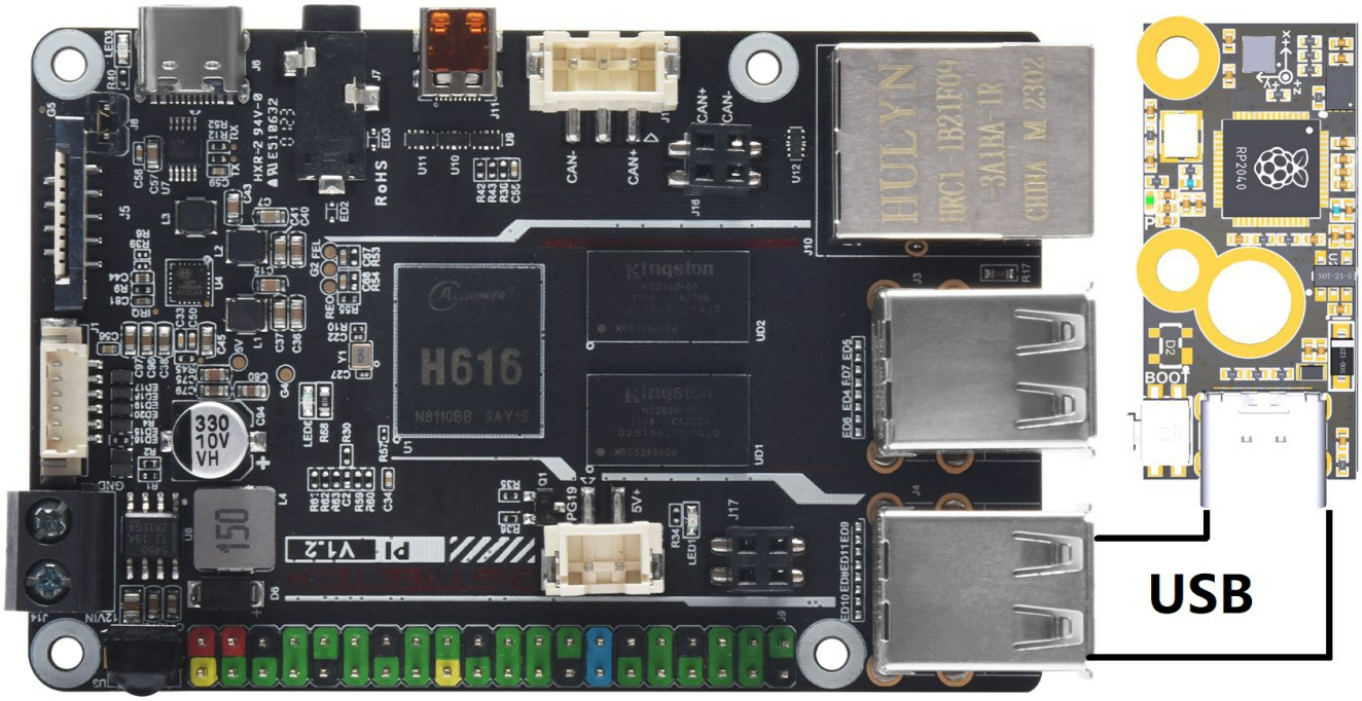
Peripheral Interfaces

Pin Description

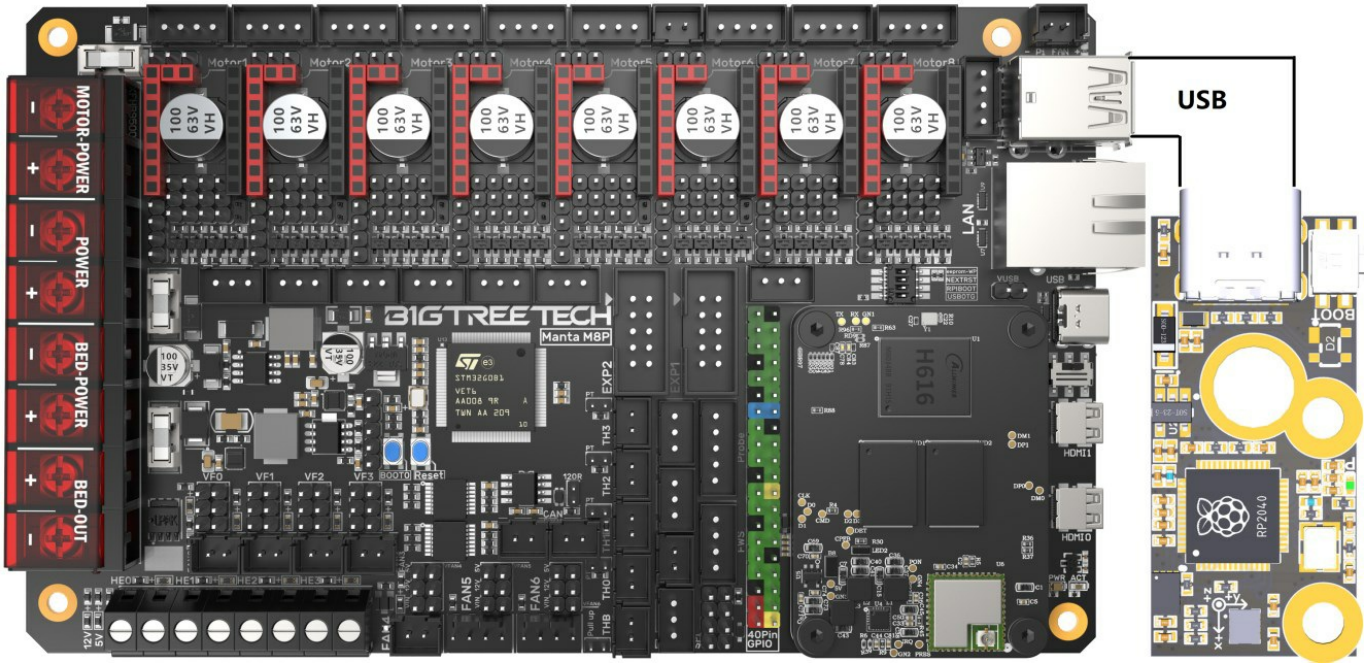


Interface Introduction

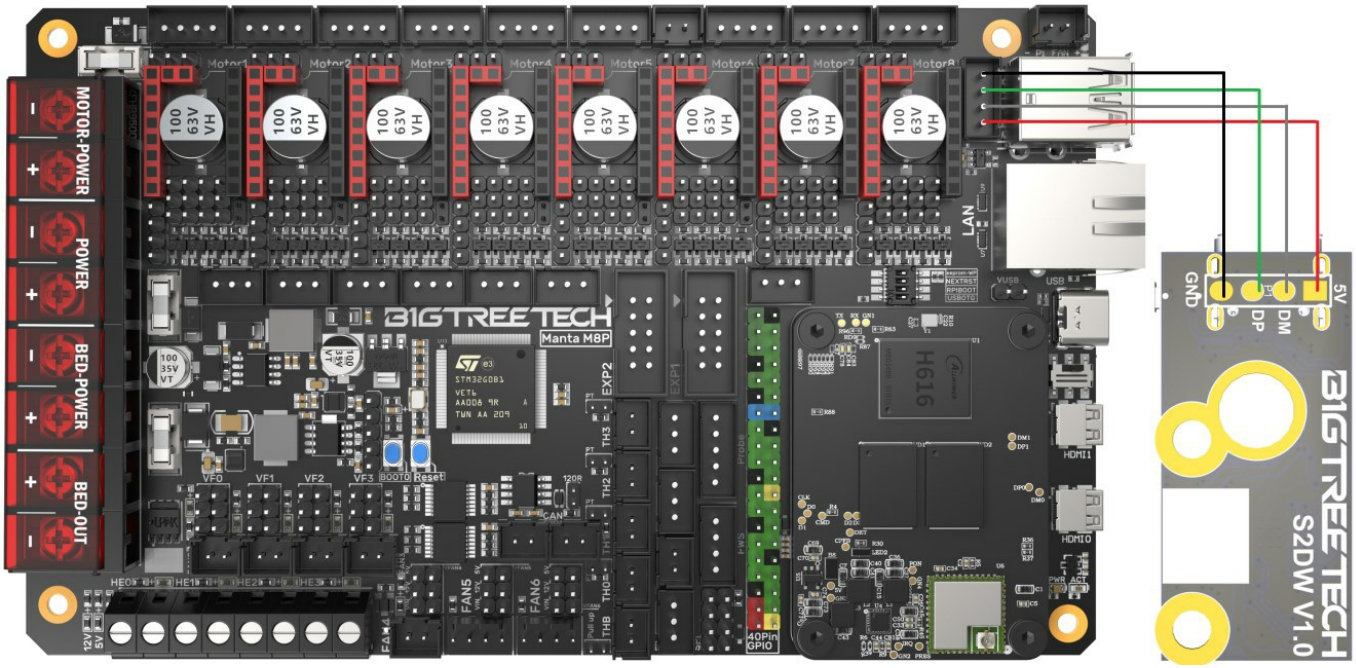
Connecting to BTT Pi V1.2 (Type-C)



Connecting to Manta M8P (Type-C)



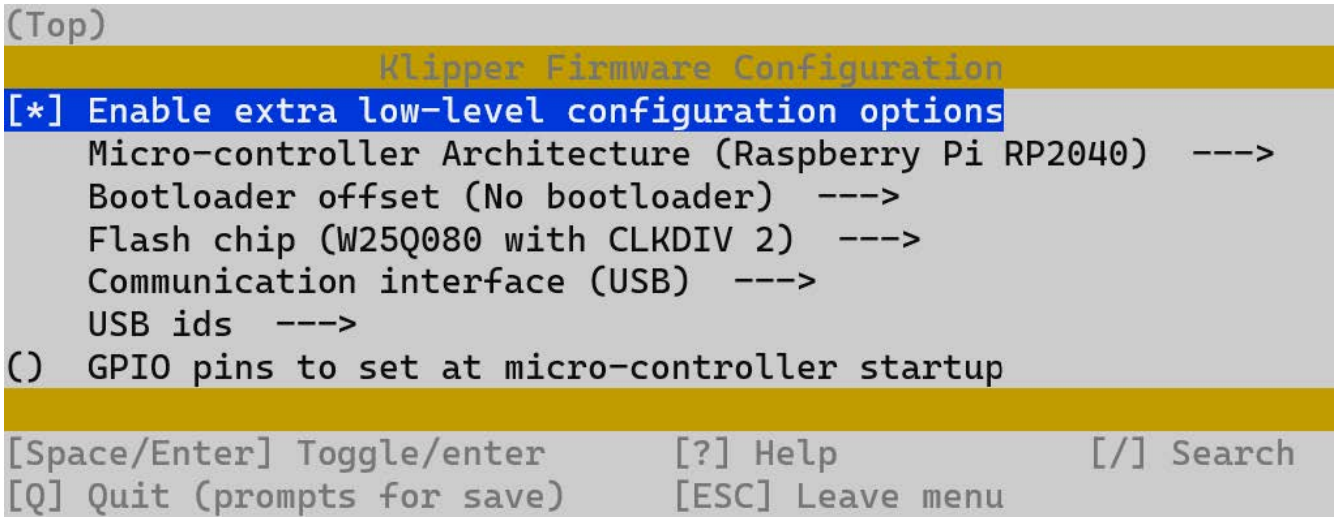
Connecting to Manta M8P (Soldering Wires)



Klipper Firmware

Compiling Klipper Firmware

1. Connect to CB1/Raspberry Pi via SSH and enter the following commands: cd ~/klipper/ make menuconfig Configure the firmware as shown in the provided image (update Klipper firmware to the latest version if options are not available).

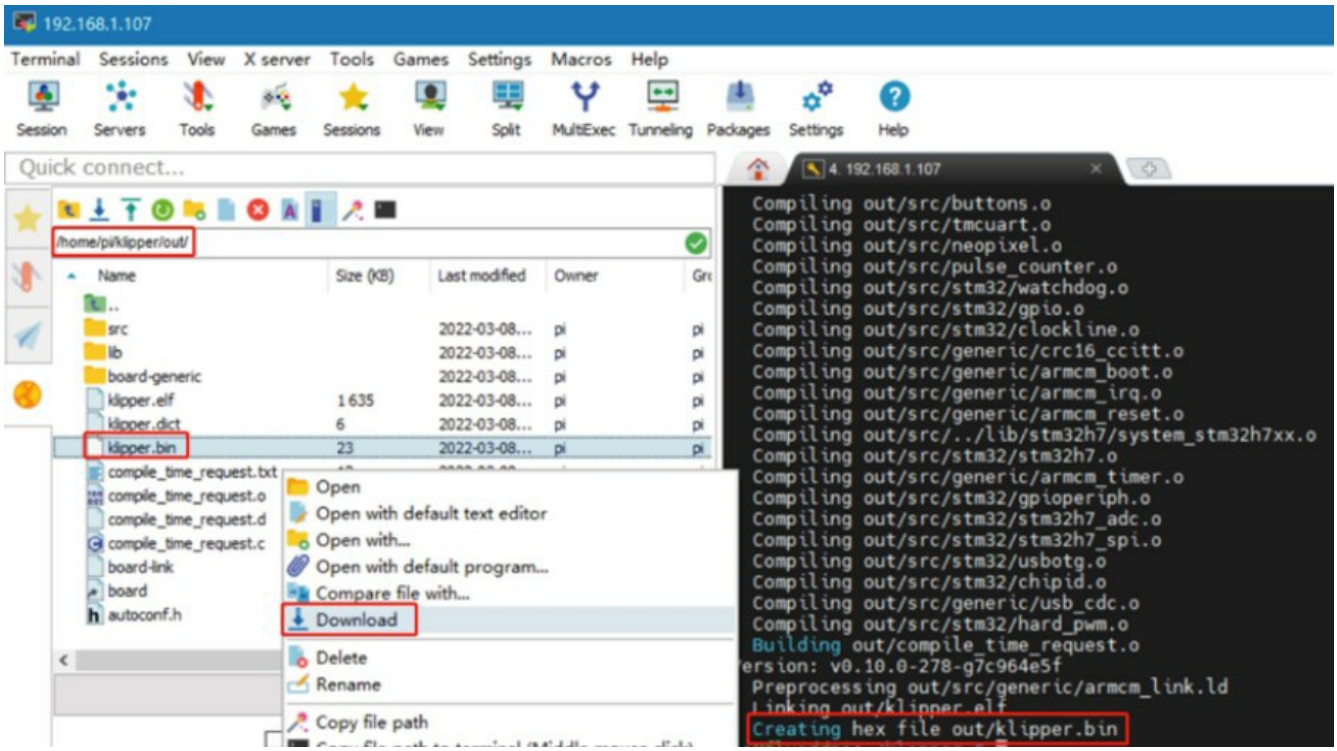


[*] Enable extra low-level configuration optionsMicro-controller

Micro-controller Architecture (Raspberry Pi RP2040) —> Bootloader offset (No bootloader) —>

Flash chip (W25Q080 with CLKDIV 2) —> Communication interface (USB) —>

2. After configuration, press q to exit, and select Yes when prompted to save.
3. Enter make to compile the firmware. The resulting klipper. bin file will be in the home/pi/klipper/out folder. This can be directly downloaded to your computer from the SSH software's left panel.



Firmware Update via DFU

Raspberry Pi or CB1 update via DFU.

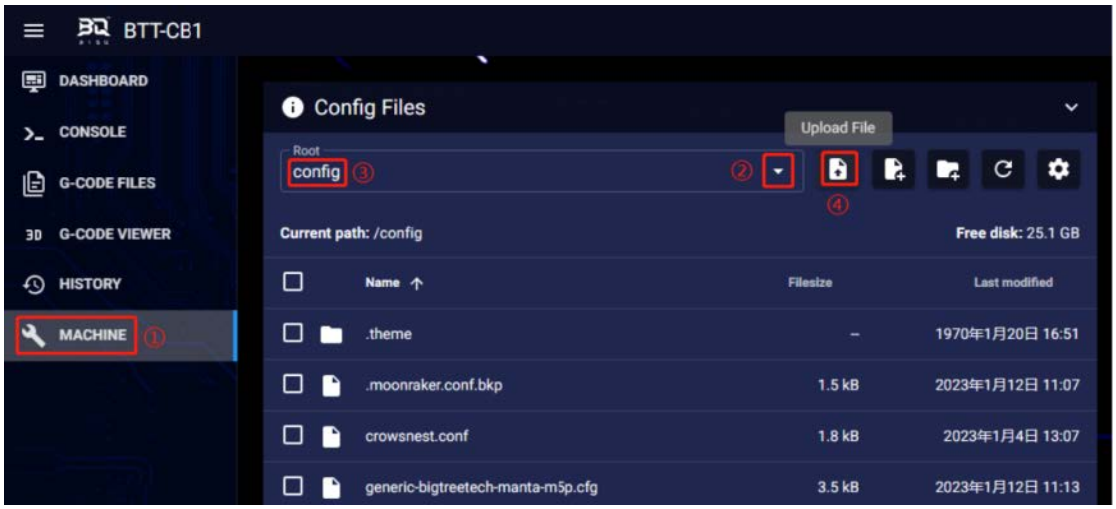
1. Hold the Boot button and connect the board to Raspberry Pi/CB1 via Type-C cable to enter DFU mode.
2. Enter lsusb in the SSH terminal to query the DFU device ID.

```
pi@fluiddpi:~ $ lsusb
Bus 001 Device 005: ID 2e8a:0003 Raspberry Pi RP2 Boot
Bus 001 Device 004: ID 1d50:6061 OpenMoko, Inc. Geschwister Schneider CAN adapter
Bus 001 Device 003: ID 0424:0c00 Microchip Technology, Inc. ( formerly SMSC ) SMC9512/9514 Fast Ethernet Adapter
Bus 001 Device 002: ID 0424:9514 Microchip Technology, Inc. ( formerly SMSC ) SMC9514 Hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
pi@fluiddpi:~ $
```

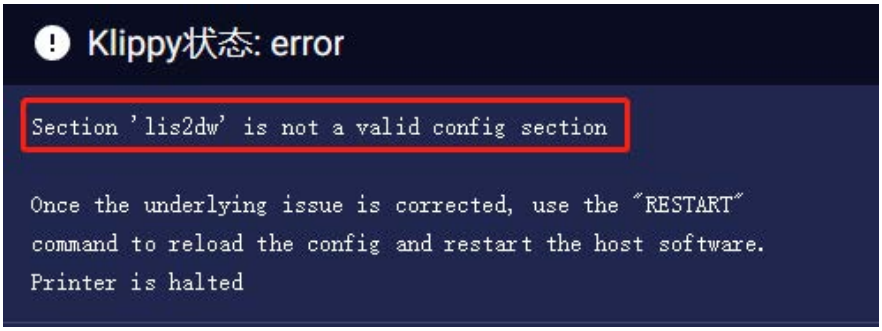
3. Enter cd klipper navigate to the Klipper directory, and enter make flash FLASH_DEVICE=2e8a:0003 start flashing the firmware (Note: Replace 2e8a:0003 with the actual device ID found in the previous step.)
4. After flashing, enter ls /dev/serial/by-id/ to query the device's Serial ID (only applicable for USB communication, not for CANBus).
5. For USB communication, you don't need to press the Boot button for subsequent updates. Enter the following command to flash the firmware make flash FLASH_DEVICE=/dev/serial/by-id/usb-Klipper_rp2040_4550357128922FC8-if00
   (Note: replacing /dev/serial/by-id/xxx with the actual ID found in the previous step).

Configuring Klipper

1. Download the sample-bigtreetech-lis2dw-v1.0.cfg config file from: https://github.com/bigtreetech/LIS2DW
2. Upload to the Configuration Files.



3. **In printer.cfg, add:** [include sample-bigtreetech-lis2dw-v1.0.cfg]
4. Set the correct ID number for your board.(USB serial or canbus)
5. Configure the module's functions according to the instructions in the link below: **https://www.klipper3d.org/Config_Reference.html#lis2dw** The axes_map parameter needs to be set according to the direction of the module installation and the movement direction of the printer. The first parameter represents the direction of the accelerometer module corresponding to the axis when the printer's X-axis moves in the positive direction (the silk screen on the module shows the direction of each axis of the module), and the second parameter represents the direction of the accelerometer when the Y-axis moves in the positive direction.
6. Lis2dw is a function added to Klipper on August 22, 2023: **https://github.com/Klipper3d/klipper/pull/6312** If you encounter the error "Section 'lis2dw' is not a valid config section", it means that your Klipper version does not support lis2dw. Update to the latest version to use it normally.



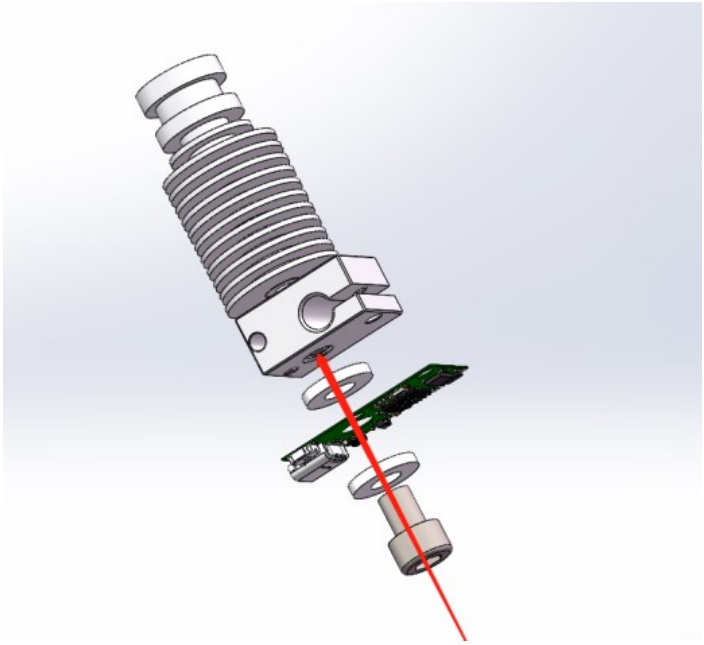
Assembly

Note: Avoid overtightening screws during installation to prevent damage. Example using the Voron StealthBurner:

- **Method 1:**
  Install on the side bracket with the dual holes (matches official spacing).

- **Method 2:**

  Use screws through the PCB and rubber ring on the heater block as shown.



- If you need further resources for this product, you can find them at [GitHub](https://github.com/bigtreetech/). If you cannot find what you need, you may contact our after-sales support(service005@biqu3d.com).
- If you encounter any other problems during use or have suggestions or feedback, please contact us. Thank you for choosing BIGTREETECH products.

Documents / Resources

BIGTREETECH S2DW V1.0 User Manual 	**BIGTREETECH S2DW V1.0 Accelerometer Board** [pdf] User Manual S2DW V1.0 Accelerometer Board, S2DW V1.0, Accelerometer Board, Board